

On Thursday, October 18, 2007, the Committee held a hearing to examine the climate change and other impacts of black carbon emissions. Black carbon is better known as soot and results from the incomplete combustion of fossil fuels and biomass. Five leading researchers in the fields of climate and atmospheric science, environmental engineering, earth system science, and environmental epidemiology testified at the hearing. The Committee received testimony about the significant global and regional effects of black carbon, its sources, and the positive effect reductions in emissions would have on both climate change and public health worldwide. [A transcript of this hearing is now available.](#)

Black Carbon Is the Second Leading Cause of Global Warming. According to testimony received by the Committee, black carbon's contribution to climate change is second only to carbon dioxide. Black carbon contributes to global warming by absorbing heat while airborne in the atmosphere.

Black Carbon Is of Particular Importance in the Arctic. In the Arctic, black carbon is of particular concern because it settles on ice and snow, reducing its reflectivity and increasing the rate of melting. According to a leading expert on the issue, black carbon is responsible for up to 30% of the warming that is occurring in the Arctic. Witnesses testified that reducing black carbon emissions is the most efficient way known of to mitigate Arctic warming.

Sources of Black Carbon Are Diverse in Nature and Geographic Location. Black carbon can be emitted from a range of naturally occurring events and human activities, including wildfires, diesel engines and domestic biofuel burning. While significant emissions of black carbon are emitted from the developed world, the majority of emissions are from the developing world.

Decreasing Emissions Will Immediately Slow Global Warming. Unlike carbon dioxide, black carbon remains in the atmosphere for only a matter of days or weeks. Therefore, mitigating black carbon emissions would quickly alleviate its warming effects. Some witnesses suggested that controlling soot emissions can therefore "buy us time" and provide an opportunity for effective policies for reducing carbon dioxide emissions to be implemented.

Decreasing Emissions Will Immediately Improve Public Health. According to recent studies, reducing black carbon emissions can reduce premature mortalities and other public

health impacts. These health benefits are primarily felt in the country that makes the reductions. Each country has a public health interest in reducing its emissions, whether that means decreasing diesel emissions in the United States or decreasing emissions from indoor cooking fuels in India or China.

Opportunities to Decrease Emissions Exist Now. Emissions studies suggest that approximately one-third of black carbon emissions come from biomass burning sources such as waste combustion and wood-fired stoves, and the remainder come from fossil fuel burning sources such as diesel engines. Installing particle traps on diesel engines, regulating the shipping industry, transitioning to alternative fuels, and more efficient stoves in the developing world are but a few examples of existing technologies that could be employed to decrease global black carbon emissions.

The following witnesses testified:

- **Dr. Mark Z. Jacobson**, Prof. of Civil and Environmental Engineering, Atmosphere/Energy Program, Stanford University
- **Dr. Tami C. Bond**, Asst. Prof. of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign
- **Dr. V. Ramanathan**, Prof. of Climate and Atmospheric Sciences, Scripps Institute of Oceanography, University of San Diego
- **Dr. Charles Zender**, Assoc. Prof. of Earth System Science, University of California at Irvine.
- **Dr. Joel Schwartz**, Professor of Environmental Epidemiology, Harvard University

Documents and Links

- [Testimony of Dr. Mark Jacobson](#)
- [Testimony of Dr. Tami Bond](#)
- [Testimony of Dr. V. Ramanathan](#)
- [Testimony Dr. Charles Zender](#)
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